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THE HOUSE ARMED SERVICES COMMITTEE
TACTICAL AIR AND LAND FORCES
SUBCOMMITTEE

STATEMENT OF

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BEFORE THE

TACTICAL AIR AND LAND FORCES SUBCOMMITTEE

OF THE

HOUSE ARMED SERVICES COMMITTEE

ON

DEPARTMENT OF THE NAVY'S AVIATION PROCUREMENT PROGRAMS

MARCH 26, 2014

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INTRODUCTION

Mr. Chairman, Ranking Member Sanchez, and distinguished members of the Subcommittee, we thank you for the opportunity to appear before you today to discuss the Department of the Navy's (DoN) Aviation programs. Our testimony will provide background and rationale for the Department's Fiscal Year 2015 budget request for aviation programs aligning to our strategic priorities and budgetary goals.

The United States is a maritime nation with global responsibilities. Our Navy and Marine Corps' persistent presence and multi-mission capability represent U.S. power projection across the global commons. They move at will across the world's oceans, seas and littorals, and they extend the effects of the sea-base deep inland. Naval Aviation provides our nation's leaders with "offshore options" where needed, when needed. We enable global reach and access, regardless of changing circumstances, and will continue to be the nation's preeminent option for employing deterrence through global presence, sea control, mission flexibility and when necessary, interdiction. We are an agile strike and amphibious power projection force in readiness, and such agility requires that the aviation arm of our naval strike and expeditionary forces remain strong.

There are several central themes to our 2015 Naval Aviation Budget plan: 5th generation fighter/attack capability; persistent multi-role intelligence, surveillance, and reconnaissance; supporting capabilities such as electronic attack, maritime patrol, and vertical lift; robust strike weapons programs; and targeted modernization of the force for relevance and sustainability.

First, we are acquiring F-35 5th generation fighter/attack aircraft while maintaining sufficient TACAIR inventory capacity. Our plan will integrate 5th generation technologies into the carrier air wing and expeditionary forces while maintaining and modernizing the capability of the current TACAIR fleet. The F-35B will replace Marine Corps F/A-18 and AV-8B aircraft. The F-35C, F/A-18E/F, and EA-18G provide complementary capabilities that enhance the versatility, lethality, and survivability of our air wings. We have maintained our F-35B procurement profile achieving program procurement stability in line with the improvements in program accountability, discipline and transparency. However, due to fiscal constraints and Navy priorities, we were compelled to reduce F-35C procurement by 33 airframes across the Future Years Defense Program (FYDP). The overall F-35 development program is adequately resourced and has implemented realistic schedule planning factors to complete System Development and Demonstration. The Navy and Marine Corps are fully committed to the F-35B and F-35C variants as we believe this aircraft is on solid path to delivering required capabilities.

The F/A-18A-F will continue to receive capability enhancements to sustain its lethality well into the next decade. Future avionics upgrades will enable network-centric operations for situational awareness and transfer of data to command-and-control nodes. To meet the demand for persistent, multi-role intelligence, surveillance, and reconnaissance (ISR) capability, the Navy and Marine Corps are building a balanced portfolio of manned and unmanned aircraft focused on missions in the maritime environment. The Unmanned Carrier Launched Airborne Surveillance and Strike (UCLASS) system will provide a persistent aircraft carrier-based ISR and strike capability as an integral part of carrier air-wing operations no later than the early part of the next decade. MQ-4C Triton will provide persistent land-based maritime ISR and complement our P-8 Multi-Mission Maritime Aircraft (MMA); MQ-8 Vertical Takeoff and Landing Tactical Unmanned Aerial Vehicle (VTUAV)/Firescout will provide ISR support to our Littoral Combat Ships (LCS); and smaller unmanned systems as the RQ-21A Small Tactical Unmanned Aircraft System (STUAS) and RQ-7B Marine Corps Tactical UAS (MCTUAS) will provide the shorter duration, line-of-sight reconnaissance capability integral at the unit level.

The Fiscal Year 2015 Budget request enables Naval Aviation to continue recapitalization of our aging fleets of airborne early warning, maritime patrol, and vertical lift platforms. The Department is recapitalizing our fleet of E-2C airborne early warning aircraft with the E-2D. E-2D integrates a new electronically-scanned radar that provides a two-generation leap in technology with the capability to detect and track existing and emerging air-to-air and cruise missile threats in support of Integrated Air and Missile Defense (IAMD). We have deployed our first P-8A squadron and are on a path to replace the P-3C by the end of the decade. Electronic attack capabilities, both carrier-based and expeditionary, continue to mature with eleven of sixteen EA-18G squadrons fielded or in transition, while we also continue development of the Next Generation Jammer (NGJ) to replace the legacy ALQ-99 Tactical Jamming System.

The Navy and Marine Corps are participating in Joint Future Vertical Lift efforts to identify leverage points for future rotorcraft investment. In Fiscal year 2015, the Department continues to modernize vertical lift capability and capacity with procurement of MH-60R/S, AH-1Z, UH-1Y, and MV-22B, and the continued development of the CH-53K and VXX (Presidential Helicopter replacement). The Special Purpose Marine Air-Ground Task Force-Crisis Response (SPMAGTF-CR), designed to support U.S. and partner security interests throughout the AFRICOM area of responsibility (AOR), leverages these vertical lift investments. The unparalleled speed and range of the MV-22B, together with the KC-130J, provides the SPMAGTF-CR with the operational reach to respond to crises throughout the AOR.

Within our Fiscal Year 2015 Budget request, the Department continues investment in strike weapons programs. These include the Air Intercept Missile (AIM-9X/BLK II); Small Diameter Bomb II (SDB II); the Joint Standoff Weapon (JSOW C-1); Tactical

Tomahawk Cruise Missiles (TACTOM/BLK IV); the Offensive Anti-Surface Weapon (OASuW); the Advanced Anti-Radiation Guided Missile (AARGM); the joint Air-to-ground Missile (JAGM); and the Advanced Precision Kill Weapon System (APKWS II).

These capabilities enable our Navy and Marine Corps warfighters to deter and dominate potential adversaries in any environment.

TACTICAL AVIATION (TACAIR)

F-35B/F-35C Lightning II:

The Department of the Navy remains firmly committed to both the F-35B Short Take-Off and Vertical Landing (STOVL) variant and the F-35C Carrier Variant (CV) of the Joint Strike Fighter (JSF) program, as they are essential to our Navy and Marine Corps aviation strategy and the Nation's security. F-35 will supplant much of the DoN's aging TACAIR fleet by replacing Navy and Marine Corps F/A-18A-D Hornets and the Marine Corps AV-8B Harrier. The incorporation of F-35B and F-35C aircraft into our naval force will provide the dominant, multi-role, fifth-generation capabilities that are essential across the full spectrum of combat operations to deter potential adversaries and enable future naval aviation power projection. F-35B is scheduled to achieve Initial Operational Capability (IOC) between July 2015 and December 2015 while the F-35C is scheduled to achieve IOC between August 2018 and February 2019.

The Marine Corps will leverage the F-35B/C capabilities to ensure our TACAIR is able to provide fifth-generation capabilities in support of our ground warriors and strike missions. The concept is one aircraft capable of multiple missions, providing the Marine Air Ground Task Force (MAGTF) with flexible expeditionary basing options, either afloat or ashore, and superior technology to dominate the fight. Our requirement for expeditionary tactical aircraft has been demonstrated repeatedly since the inception of Marine aviation over one hundred years ago. Given the threats we will face in the future, the F-35B is clearly the aircraft of choice to meet our expeditionary operating requirements at sea and ashore. Similarly, in the Carrier Strike Group (CSG), the F-35C, F/A-18E/F, and EA-18G, operating together, provide survivable, long-range strike capability and persistence in an anti-access/area-denied environment. F-35C will provide the CSG Commanders greater tactical agility and strategic flexibility to counter a broad spectrum of threats and win in operational scenarios that cannot be addressed by currently fielded aircraft.

DoD established the F-35 program with a planned measure of concurrent development and production that balanced cost, risk, and need for TACAIR modernization. Concurrency, however, is a transient issue in which risks progressively decline through the end of SDD. The F-35 program has worked with the prime contractor (Lockheed-Martin) to implement a concurrency management structure and refine the estimate of

concurrency costs based on discrete test and qualification events. As more testing is completed, concurrency risks are progressively reduced as the design is confirmed or issues identified requiring changes are incorporated. Earlier aircraft are open to a greater need for changes, and as succeeding Low-Rate Initial Production (LRIP) lots are built, their cumulative requirements for retrofit modifications decline. Furthermore, beginning with LRIP 5, Lockheed-Martin is contractually obligated to share in the costs associated with concurrency. LRIP 6/7 will further reduce the government's exposure to overruns as Lockheed-Martin is required to pay for all cost overruns via firm fixed-price contracts.

F-35 sustainment costs remain a concern. The DoN, working in concert with the Joint Program Office (JPO), is analyzing options, both inside and outside of the JPOs span of control to reduce operating cost. These include, reviewing basing options and sequencing, unit level manpower/ squadron size, and discrete sustainment requirements. Through these combined efforts, the Department believes we will converge on an affordable F-35 sustainment strategy that meets both the required level of Service/Partner performance and lowers the total life-cycle cost of the program.

The Fiscal Year 2015 President's Budget requests \$1.0 billion in Research, Development, Test & Evaluation (RDT&E,N) to continue the F-35 SDD program and \$2.4 billion in Aircraft Procurement, Navy (APN) for eight F-35 aircraft (six F-35B and two F-35C) with associated aircraft hardware, modification requirements, and spares. The request includes funding for Block 4 systems engineering and planning to achieve follow-on capabilities for emerging and evolving threats and additional weapons integration. Additionally, the Marine Corps is pursuing the procurement of additional F-35s to replace the 6 AV-8B Harriers that were lost due to enemy action in Afghanistan on 14 September 2012.

The DoN is aware of the challenges that remain on the F-35 program, but we believe the program continues to demonstrate increased stability, accountability, and fiscal discipline. The F-35 is essential to the future of Navy/Marine Corps Aviation and the Department is fully committed to the F-35B and F-35C variants of this program. The DoN continues to closely monitor all F-35 program aspects (development, production, and sustainment) to ensure that this capability is obtained at the lowest cost and at the earliest date possible, to meet our national security obligations.

F/A-18 Overview

The F/A-18 Hornet continues to meet readiness and operational commitments. There are 26 Navy Super Hornet squadrons with 513 F/A-18E/Fs; deliveries and squadron transitions will continue through 2016. There are 11 Navy and 11 Marine Corps F/A-18 A-D active component squadrons with 618 Hornets. Super Hornets and F/A-18A-D Hornets have conducted more than 200,000 combat missions since September 11, 2001.

F/A-18 A/B/C/D Hornet

The Fiscal Year 2015 President's Budget requests \$250.3 million in APN to implement aircraft commonality programs to maintain relevant capability and improve reliability and ensure structural safety of the inventory of 618 F/A-18 Hornets of which \$55.7 million is for the Service Life Extension Program (SLEP).

The F/A-18A-D was designed for, and has achieved, a service life of 6,000 flight hours. These aircraft have performed as expected through their design life and now service life management of this aircraft is intended to extend this platform well beyond its designed 6,000 flight hours. Through detailed analysis, inspections, and, as required, structural repairs, the DoN has been successful in achieving 8,000 flight hours per aircraft and is pursuing a strategy to go as high as 10,000 flight hours on select aircraft. Continued investment in SLEP, the High Flight Hour (HFH) program, Program Related Engineering (PRE), and Program Related Logistics (PRL) is critical for our flight hour extension strategy and to sustain the combat relevancy of these aircraft.

In order to maintain warfighting relevancy in a changing threat environment, we will continue to procure and install advanced systems such as Joint Helmet-Mounted Cueing Systems (JHMCS), High Order Language (HOL) Mission Computers, ALR-67v3, ALQ-214v5, Multi-Function Information Distribution System (MIDS), APG-73 radar enhancements, Advanced Targeting FLIR (ATFLIR) upgrades, and LITENING for the Marine Corps on selected F/A-18A-D aircraft.

F/A-18 E/F Super-Hornet

The Fiscal Year 2015 President's Budget requests \$342.7 million in APN to implement aircraft commonality programs, maintain relevant capabilities, improve reliability, and ensure structural safety of the Super-Hornet fleet; and \$13.8 million RDT&E,N to support the F/A-18E/F Service Life Assessment Program (SLAP).

The F/A-18E/F significantly improves the survivability and strike capability of the carrier air wing. The Super-Hornet provides increased combat radius and endurance, and a twenty-five percent increase in weapons payload over F/A-18A-D Hornets. The production program continues to deliver on-cost and on-schedule.

The Super-Hornet uses an incremental approach to incorporate new technologies and capabilities, to include: Digital Communication System (DCS) Radio, Multi-Functional Information Distributed System (MIDS) - Joint Tactical Radio System (JTRS), Joint Helmet Mounted Cueing System (JHMCS), ATFLIR with shared real-time video, Accurate Navigation (ANAV), Digital Memory Device (DMD), Distributing Targeting System (DTS), Infrared Search and Track (IRST) and continued advancement of the APG-79 AESA Radar.

The \$13.8 million RDT&E,N request supports the F/A-18E/F SLAP requirement. Currently, the F/A-18 E/F fleet, on average, has flown approximately 36 percent of the design life of 6,000 total flight hours. The remaining design service-life will not be adequate to meet future operational commitments through 2035. In 2008, the Navy commenced a three phased F/A-18E/F SLAP to analyze actual usage versus structural test data and determine the feasibility of extending F/A-18E/F service life from 6,000 to 9,000 flight hours via a follow-on SLEP. The F/A-18E/F SLAP will identify the necessary inspections and modifications required to achieve 9,000 flight hours and increase total arrested landings and catapults beyond currently defined life limits. This extension is currently assessed as low risk. The Service Life Management Plan (SLMP) philosophy has been applied to the F/A-18E/F fleet at an earlier point in its lifecycle than the F/A-18A-D. This will facilitate optimization of Fatigue Life Expended, flight hours, and total landings, thereby better aligning aircraft service life with fleet requirements.

AV-8B Harrier

The Fiscal Year 2015 President's Budget requests \$65.5 million in APN funds to continue the incorporation of Obsolescence Replacement/Readiness Management Plan systems; electrical and structural changes; upgrades to air-to-air weapon system employment and integration components; inventory sustainment and upgrade efforts to offset obsolescence and attrition; LITENING Pod upgrades; and F402-RR-408 engine safety and operational changes.

The Fiscal Year 2015 President's Budget requests \$25.4 million in RDT&E,N funds to continue Design, Development, Integration and Test of various platform improvements, to include: Engine Life Management Program (ELMP), Escape Systems, Joint Mission Planning System (JMPS), and Block upgrades to various mission and communication systems, navigation equipment, weapons carriage, countermeasures, and the Obsolescence Replacement (OR)/Readiness Management Plan (RMP).

The AV-8B continues to be deployed in support of operational contingencies. Each MEU deploys with embarked AV-8Bs. The AV-8B, equipped with LITENING targeting pods and a video downlink to ROVER ground stations, precision strike weapons, and beyond visual range air-to-air radar missiles, has continued to be a proven, invaluable asset for the MAGTF and joint commander across the spectrum of operations. During the first half of Fiscal Year 2015 the AV-8B will receive the H6.1 Operational Flight Program enabling full integration of the Generation 4 LITENING targeting pod that includes correction of software deficiencies to smart weapon employment and targeting. During 2015, the program will also continue work on the H6.2 Operational Flight Program to integrate Federal Aviation Administration (FAA) compliant RNP/RNAV capability and correct additional software deficiencies identified through combat operations. As an out-of-production aircraft, the AV-8B program will continue its focus on sustainment efforts to mitigate significant legacy inventory shortfalls, maintain

airframe integrity, achieve full FLE, and address reliability and obsolescence issues of avionics and subsystems. The Airborne Variable message Format (VMF) terminals will be installed in AV-8B to replace the current digital-aided close air support (CAS) technology. Additional efforts include tactical datalink and sensor improvements in support of operational contingencies until transition to the F-35.

Operation ODYSSEY DAWN and ENDURING FREEDOM, as well as current operations in the Horn of Africa, confirm the expeditionary advantages of STOVL capabilities by placing the Harrier as the closest multi-role fixed-wing asset to the battlefield. Such dynamic support greatly reduces transit times to the battlefield and enables persistent CAS aircraft without strategic tanking assets. Airframe sustainment initiatives, capability upgrades, and obsolescence mitigation is essential and must be funded to ensure the AV-8B remains lethal and relevant.

TACAIR Inventory Management

The Strike Fighter Shortfall (SFS) associated with the Fiscal Year 2015 President's Budget is manageable. The shortfall is currently predicted to peak at approximately 35 aircraft in Fiscal Year 2023; 20 of which are USMC aircraft and 15 USN aircraft.

The Navy and Marine Corps continue to carefully monitor strike fighter inventory requirements and projected availability. The Department's Inventory Forecasting Tool (IFT) projects the combined effects of deliveries, force structure, aircraft usage rates, structural life limits, depot turnaround time, Fatigue Life Expenditure (FLE), arrested and field landings, and catapult launches on the total strike fighter aircraft inventory. The IFT will be replaced by the Naval Synchronization Tool (NST) no later than the end of Fiscal Year 2014. This transition will enable increased fidelity of aircraft inventory projections and management.

In addition, through lean-six sigma black belt analysis of the entire DoN F/A-18A-D inventory, the USMC has created a TACAIR 2030 Roadmap that drives the IFT predicted 20 aircraft shortfall to zero, while saving (cost avoidance) of \$1.14B. As F-35B enters service, it will initially replace the AV-8B, followed by the USMC F/A-18A-Ds. The last active USMC F/A-18 squadron is scheduled to transition in 2029 and the current USMC F/A-18 reserve squadron will not receive its F-35Bs until Fiscal Year 2030. The USMC also plans to source AV-8B's as Strike fighters in lieu of sourcing for F/A-18's in contingency operations.

Current IFT and USMC TACAIR 2030 roadmap assumptions: The DoN will maintain its current tactical fixed-wing force structure; utilization rates will not increase; the delivery rate of F-35B/C remains as planned in the Fiscal year 2015 FYDP; and FA-18 A-D High Flight Hour (HFH) inspections/repair, and SLEP efforts on candidate aircraft allows Fleet Readiness Center (depot) inducted aircraft to reach an extended authorized life of 9,000

hours, with a subset of those aircraft attaining 10,000 flight hours (a by bureau number squadron mapping is contained in the TACAIR 2030 Roadmap).

Airborne Electronic Attack (AEA) / EA-6B Prowler

The Fiscal Year 2015 President's Budget request includes \$15.8 million in RDT&E,N for Electronic Warfare (EW) Counter Response; \$7.8 million RDT&E,N for MAGTF EW; \$34.8 million in APN for Airborne Electronic Attack (AEA) systems; \$11.0 million in APN for all EA-6B series aircraft; and \$14.8 million APN for MAGTF EW.

Currently, there are 42 EA-6Bs in the Navy and Marine Corps. Of these aircraft, 37 are distributed to six active squadrons, one reserve squadron, two test squadrons, and one Fleet Replacement Squadron, and five aircraft are in depot repair. The total includes 10 Navy and Marine Corps Improved Capability (ICAP) II aircraft and 32 ICAP III aircraft. Following the final Navy EA-6B transition to EA-18G in 2015, all remaining ICAP III EA-6Bs will transfer to and be operated by the Marine Corps, or be in pipeline for final disposition. Final retirement of the EA-6B from the Department's inventory will be in 2019.

Marine aviation is on a path towards a distributed AEA system of systems that is a critical element in achieving the MAGTF EW vision: A composite of manned and unmanned surface, air, and space assets on a fully collaborative network providing the MAGTF commander control of the electromagnetic spectrum when and where desired. Included in this plan are the ALQ-231 Intrepid Tiger II communications jammer, UAS EW payloads, a Software Reprogrammable Payload and an EW Services Architecture to facilitate collaborative networked Electronic Warfare Battle Management.

Intrepid Tiger II development and procurement is in response to Marine Corps requirements for increased precision EW capability and capacity across the MAGTF and provides EW capability directly to tactical commanders without reliance upon the limited availability of the low density/high demand EA-6B Prowler. The Intrepid Tiger II is currently carried on the AV-8B, has successfully completed six deployments in U.S. Central Command's (CENTCOM) Area of responsibility (AOR), and is currently deployed with both the 13th and 22nd Marine Expeditionary Units (MEUs). Integration on Marine Corps F/A-18 aircraft is scheduled to be completed in the second quarter of Fiscal Year 2014 and on Marine Corps rotary-wing aircraft by the second quarter of Fiscal Year 2015 .

Airborne Electronic Attack (AEA) / EA-18G Growler

The Fiscal Year 2015 President's Budget request is \$43.5 million in APN for procurement of Avionics Peculiar Ground Support Equipment for the EA-18G aircraft; \$18.7 million in RDT&E,N for integration of Jamming Techniques Optimization

improvements and evolutionary software development; and \$246.9 million RDT&E,N for Next Generation Jammer (NGJ).

In 2009, the Navy began transition from EA-6Bs to EA-18Gs. The first EA-18G squadron deployed in an expeditionary role in November 2010 to Iraq, and subsequently redeployed on short notice to Italy in March 2011, in support of Operation NEW DAWN (OND) and Operation UNIFIED PROTECTOR (OUP). The EA-18G is a critical enabler in the Joint force, bringing to the fight fully netted warfare capabilities that will provide electromagnetic spectrum dominance in an electromagnetic maneuver warfare (EMMW) environment.

The first carrier-based EA-18G squadron deployed in May 2011. Three active component Navy expeditionary squadrons, seven of ten carrier based squadrons, and one reserve squadron are in, or have completed, transition to the EA-18G. The 10 carrier based EA-18G squadrons will fulfill USN requirements for airborne electronic attack; six expeditionary EA-18G squadrons will fill the joint, high-intensity AEA capability required by the Joint Forces Commander previously fulfilled by the USN and USMC EA-6B. The Navy will be divested of EA-6Bs by 2015; the Marine Corps by 2019. The inventory objective is for 138 EA-18G aircraft. Since the initial deployment, Growlers have flown more than 2,300 combat missions, have expended on average a service-life of approximately six percent of the 7,500 total flight hours per aircraft, and are meeting all operational commitments.

The Next Generation Jammer (NGJ) is new electronic warfare technology that is the replacement for the 41-year old ALQ-99, currently the only Navy and Joint airborne Tactical Jamming System (TJS) pod. The ALQ-99 has limited capability to counter tactically and technically advanced threats, is increasingly difficult and costly to maintain, and has a vanishing industrial supplier base. Navy/DoD requires NGJ to meet current and emerging Electronic Warfare threats. NGJ will have the necessary power and digital techniques to counter increasingly advanced and sophisticated adversary electronic warfare search, surveillance, and targeting-radars and communications systems. NGJ will be DoD's only comprehensive tactical Airborne Electronic Attack (AEA) capability, supporting all Services and joint/coalition partners, and will be implemented in three increments: Mid-Band (Increment 1), Low-Band (Increment 2), and High-Band (Increment 3). NGJ is designed to provide improved capability in support of joint and coalition air, land, and sea tactical strike missions and is critical to the Navy's vision for the future of strike warfare. Fiscal Year 2015 funding is vital to maintain schedule, allowing the program to transition into the Technology Maturation and Risk Reduction (TMRR) development phase and ensure timely start of the critical EA-18G long lead integration activities. Planned Fiscal Year 2015 TMRR activities include: completion of the system functional review, development and release of the Request for Proposal (RFP) for the Engineering and Manufacturing Development (E&MD) phase, maturation of software specification requirements, and conduct of the Technology

Readiness Assessment (TRA) demonstrations. Fiscal Year 2015 constitutes the bulk of a 25-month effort to achieve Technology Readiness Level (TRL) 6 in support of planned Milestone B in Fiscal Year 2016.

E-2D Advanced Hawkeye (AHE)

The Fiscal Year 2015 President's Budget requests \$193.2 million in RDT&E,N for continuation of added capabilities to include: In-Flight Refueling, Tactical Targeting Network Technology, Secret Internet Protocol Router Chat, and the Advanced Mid-Term Interoperability Improvement Program; \$1,046 million in APN for four Full Rate Production (FRP) Lot 3 aircraft (the second year of a 25 aircraft Multi-Year Procurement (MYP) contract covering Fiscal Years 2014-2018), Advance Procurement (AP) for Fiscal Year 2016 FRP Lot 4 aircraft; and Economic Ordering Quantity (EOQ) funding for the MYP for Fiscal Years 2017 and 2018.

The E-2D AHE is the Navy's carrier-based Airborne Early Warning and Battle Management Command and Control system. The E-2D AHE provides Theater Air and Missile Defense and is capable of synthesizing information from multiple onboard and off-board sensors, making complex tactical decisions and then disseminating actionable information to Joint Forces in a distributed, open-architecture environment.

Utilizing the newly developed AN/APY-9 Mechanical/Electronic Scan Array radar and the Cooperative Engagement Capability system, the E-2D AHE works in concert with tactical aircraft and surface-combatants equipped with the Aegis combat system to detect, track and defeat air and cruise missile threats at extended range and provide Strike Group Commanders the necessary required reaction time.

The first Fleet E-2D squadron (VAW-125) has transitioned and was designated "safe for flight" in January 2014. Initial Operational Capability (IOC) is on track for the first quarter of Fiscal Year 2015.

ASSAULT SUPPORT AIRCRAFT

MV-22

The Fiscal Year 2015 President's Budget requests \$ 61.2 million in RDT&E,N for continued product improvements and \$1.53 billion in APN for procurement and delivery of 19 MV-22s (Lot 19). Fiscal Year 2015 will be the third year of the follow-on V-22 MYP contract covering Fiscal Years 2013-2017. The funds requested in the Fiscal Year 2015 President's Budget request fully fund Lot 19 and procures long-lead items for Fiscal Year 2016 Lot 20 MV-22 aircraft. The Marine Corps continues to field and transition aircraft on time. The APN request includes \$135.6 million to support the ongoing

Operations and Safety Improvement Programs (OSIP), including Correction of Deficiencies and Readiness.

MV-22 Osprey vertical flight capabilities coupled with the speed, range, endurance of fixed-wing transports, are enabling effective execution of current missions that were previously unachievable on legacy platforms. This capability is at the core of the Marine Corps' recently fielded SPMAGTF-CR. As the MV-22 approaches the 200,000 flight hour milestone, it is on pace to be one of the safest of any DoD aircraft dating back to the 1960s.

The follow-on MYP, which began in Fiscal Year 2013, will procure at least 93 MV-22s over five years and includes significant savings of approximately \$1 billion when compared to single year procurements. The stability of the MYP supports the Marine Corps' need to retire old aircraft and field new and improved capabilities. This stability also benefits the supplier base and facilitates cost reductions on the part of both the prime contractor and sub-tier suppliers.

Through introduction of the Osprey tilt-rotor capability into combat, the service has gained valuable insight with respect to readiness and operating costs. Since 2010, MV-22 mission capability rates have increased fourteen percent. During the same period, cost per flight hour rates decreased fourteen percent. To keep these improvements on track, a readiness OSIP was introduced in Fiscal year 2012. Fiscal Year 2015 OSIP provides a necessary and stable source of crucial modification funding as the Ospreys continue to improve readiness and reduce operating cost.

CH-53K Heavy Lift Replacement Program

The Fiscal Year 2015 President's Budget requests \$573.2 million RDT&E,N to continue Engineering and Manufacturing Development (EMD) of the CH-53K. Since completing its Critical Design Review in July 2010, the CH-53K program commenced system capability and manufacturing process demonstration, has nearly completed assembly of the first five test aircraft; one Ground Test Vehicle (GTV) and four Engineering Development Model (EDM) aircraft. In December 2013, the program entered Developmental Test. The GTV has successfully completed numerous ground test requirements, to include the "Bare Head Light-Off." The program is currently on schedule to execute its first flight by the end of 2014. During Fiscal Year 2015, the program will continue to execute developmental test flights, deliver the final EDM, and start production of System Demonstration Test Article (SDTA) aircraft which will be production representative aircraft utilized for Operational Test.

The new-build CH-53K will fulfill land and sea based heavy-lift requirements not resident in any of today's platforms, and contribute directly to the increased agility, lethality, and presence of joint task forces and MAGTFs. The CH-53K will transport 27,000 pounds of external cargo out to a range of 110 nautical miles, nearly tripling the

CH-53E's lift capability under similar environmental conditions, while fitting into the same shipboard footprint. The CH-53K will also provide unparalleled lift capability under high-altitude and hot weather conditions, greatly expanding the commander's operational reach.

Maintainability and reliability enhancements of the CH-53K will improve aircraft availability and operational effectiveness over the current CH-53E with improved cost effectiveness. Additionally, survivability and force protection enhancements will dramatically increase protection for both aircrew and passengers, thereby broadening the depth and breadth of heavy lift operational support to the joint task force and MAGTF commander. Expeditionary heavy-lift capabilities will continue to be critical to successful land and sea-based operations in future anti-access, area-denial environments, enabling sea-basing and the joint operating concepts of force application and focused logistics.

The H-53E aircraft currently in service continue to meet unprecedented operational demand but are approaching 30 years of service and becoming ever more challenging to maintain. To keep the "Echo" viable until the "Kilo" enters service, the Fiscal Year 2015 President's Budget requests \$38.2 million in APN for both near and mid-term enhancements. These modifications include Condition Based Maintenance software upgrades, T-64 Engine Reliability Improvement Program kit installations, Critical Survivability Upgrade (CSU) installations, Smart Multi-Function Color Display (SMFCD) and sustainment efforts such as Kapton wiring replacement and improved Engine Nacelles. With the exception of the CSU and SMFCD, the same modifications are also made to the USN MH-53E helicopters.

ATTACK AND UTILITY AIRCRAFT

UH-1Y // AH-1Z

The Fiscal Year 2015 President's Budget requests \$44.1 million in RDT&E,N for continued product improvements and \$859.7 million in APN for 26 H-1 Upgrade aircraft: 15 UH-1Y and 11 AH-1Z. The program is a key modernization effort designed to resolve existing safety deficiencies and enhance operational effectiveness of the H-1 fleet. The 85 percent commonality between the UH-1Y and AH-1Z will significantly reduce life-cycle costs and the logistical footprint, while increasing the maintainability and deployability of both aircraft. The program will provide the Marine Corps with 349 H-1 aircraft through a combination of new production and a limited quantity of remanufactured aircraft.

The H-1 Upgrades Program is replacing the Marine Corps' UH-1N and AH-1W helicopters with state-of-the-art UH-1Y "Yankee" and AH-1Z "Zulu" aircraft. The new aircraft are fielded with integrated glass cockpits, world-class sensors, and advanced

helmet-mounted sight and display systems. The future growth plan includes a digitally-aided, close air support system designed to integrate these airframes, sensors, and weapons systems together with ground combat forces and other capable DoD aircraft. Integration of low-cost weapons such as the Advanced Precision Kill Weapon System II (APKWS II) has increased lethality while reducing collateral damage. The UH-1Y aircraft achieved IOC in August 2008 and FRP in September 2008. The “Yankee Forward” procurement strategy prioritized UH-1Y production in order to replace the under-powered UH-1N fleet as quickly as possible. The AH-1Z completed its operational evaluation (OT-II3C) in June 2010, and received approval for FRP in November 2010. The AH-1Z achieved IOC in February 2011. As of February 19, 2013, 126 aircraft (89 UH-1Ys and 37 AH-1Zs) have been delivered to the Fleet Marine Force; an additional 58 aircraft are on contract and in production. The last 2 aircraft from Lot 7 will deliver in March/April 2014. Lot 8 deliveries are progressing on or ahead of schedule.

In December 2011, to address existing attack helicopter shortfalls, the Marine Corps decided to pursue an all AH-1Z Build New (ZBN) procurement strategy and leave AH-1W airframes in the inventory rather than removing them from service to begin the remanufacture process. The transition to an all ZBN airframe strategy began with Lot 10 (Fiscal Year 2013) as reflected in the current USMC program of record. The aircraft mix is 37 remanufactured AH-1Z and 152 ZBN aircraft. The total aircraft procurement numbers remain the same at 160 UH-1Ys and 189 AH-1Zs for a total of 349 aircraft.

MH-60 (Overview)

MH-60 Seahawks have consistently met readiness and operational commitments. There will be 38 Navy Seahawk squadrons with 275 MH-60S's and 251 MH-60R's when transitions from the SH-60B, SH-60F, and HH-60H are complete. Production and squadron transitions will continue through 2017. Over the last twelve years of combat operations, deployed ashore and aboard our aircraft carriers, amphibious ships, and escort warships at sea, DoN helicopters have provided vital over-watch and direct support to our troops in combat, on the ground, and in multiple theaters of operation and in a variety of missions including support to special operations forces, air ambulance, surface warfare, anti-submarine warfare, mine warfare, logistics support and humanitarian assistance/disaster relief.

MH-60R Seahawk

The Fiscal Year 2015 President's Budget requests \$1.04 billion in APN for 29 helicopters. The production program continues to deliver on-cost and on-schedule.

The MH-60R Multi-Mission Helicopter provides strike group protection and adds significant capability in coastal littorals and regional conflicts. The MH-60R represents a

significant avionics improvement to H-60 series helicopters by enhancing primary mission areas of Undersea Warfare and Surface Warfare which includes the Fast Attack Craft/Fast In-shore Attack Craft (FAC/FIAC) threat response capabilities. The MH-60R is the sole organic air ASW asset in the CSG and critical to its defense. Additionally, it serves as a key contributor to theater level ASW. The MH-60R also employs advanced sensors and communications to provide real-time battlespace management with a significant, passive, over-the-horizon targeting capability. Secondary mission areas include Search and Rescue, Vertical Replenishment, Naval Surface Fire Support, Logistics Support, Personnel Transport and Medical Evacuation.

The \$11.5 million RDT&E,N request supports the MH-60R Test Program consisting of numerous system upgrades and Pre-Planned Product Improvements, to include the Digital Rocket Launcher (DRL) with Advanced Precision Kill Weapon System (APKWS II) and the Helicopter Infra-Red Suppression System (HIRSS).

MH-60S Seahawk

The Fiscal Year 2015 President's Budget requests \$210 million in APN for eight helicopters to complete the production program of 275 total helicopters. The production program continues to deliver on-cost and on-schedule.

The MH-60S Multi-Mission Helicopter provides strike group protection and adds significant capability in coastal littorals and regional conflicts. The MH-60S represents a significant avionics improvement to H-60 series helicopters by enhancing primary mission areas of Mine Warfare and Surface Warfare which includes the FAC/FIAC threat response capabilities. Secondary mission areas include Combat Search and Rescue, Support to Special Operations Forces, Vertical Replenishment, Logistics Support, Personnel Transport and Medical Evacuation.

The \$25.9 million RDT&E,N request supports the MH-60S Test Program consisting of numerous system upgrades and Pre-Planned Product Improvements including: Airborne Mine Countermeasures (AMCM); and Armed Helicopter FAC/FIAC Defense.

Armed Helo Block 3A OT was completed in June 2007 and Block 3B (added Link 16 capability) OT was completed in November 2009. Test and Evaluation (T&E) of fixed forward firing weapon (FFW) (20mm gun system) was completed in Fiscal Year 2012. T&E of initial FFW Unguided Rocket (UGR) capability was completed in Fiscal Year 2013. T&E for FFW Digital Rocket Launcher (DRL) with Advanced Precision Kill Weapon System and expanded UGR capability for the FAC/FIAC threat is in work and planned to complete in Fiscal Year 2015. Planned AMCM Initial Operational test and Evaluation (IOT&E) and Follow-On Operational test and Evaluation (FOT&E) periods were changed to Operational Assessments with the final IOT&E aligned with LCS MCM Mission Package IOT&E.

EXECUTIVE SUPPORT AIRCRAFT

VH-3D/VH-60N Executive Helicopter Series

The VH-3D and VH-60N are safely performing the Executive Lift mission worldwide. As these aircraft continue to provide seamless vertical lift for the President and Vice President of the United States, the DoN is working closely with HMX-1 and industry to sustain these aircraft until a Presidential Replacement platform is fielded. The Fiscal Year 2015 President's Budget requests an investment of \$71.3 million of APN to continue programs that will ensure the in-service Presidential fleet remains a safe and reliable platform. Ongoing VH-60N efforts include the Cockpit Upgrade Program (CUP), engine upgrade program, and a Communications Suite Upgrade (Wide Band Line of Sight). The continuing Structural Enhancement Program and the Obsolescence Management Program applies to both VH-60N and VH-3D. The VH-3D Cockpit Upgrade Program, a Fiscal Year 2012 new start program, addresses a number of obsolescence issues. Continued investments in the in-service fleet will ensure continued safe and reliable execution of the Executive Lift mission. These technology updates for legacy platforms will be directly leveraged for the benefit of the ensuing replacement program (VXX).

VXX Presidential Helicopter Replacement Aircraft

The Fiscal Year 2015 President's Budget request includes \$388.1 million of RDT&E,N for continuing efforts on VXX, and primarily funds the EMD contract and government activities associated with the EMD phase of the program.

Significant progress has been made in the past year and the program requirements and acquisition strategy have now been approved. The acquisition approach is based on integration of mature subsystems into an air vehicle that is currently in production. This strategy will enable the program to proceed directly into the EMD phase. The Milestone B review and subsequent contract award are planned to occur during Fiscal Year 2014. The first of the planned inventory of 21 aircraft could begin fielding as early as 2020.

FIXED-WING AIRCRAFT

KC-130J

The Fiscal Year 2015 President's Budget requests \$92.3 million for procurement of one KC-130J included in the second year of the multi-service MYP request, one fuselage trainer, and continued product improvements of \$21.6 million. Targeted improvements include aircraft survivability through advanced electronic countermeasure modernization, and obsolescence upgrades to the Harvest HAWK ISR/Weapon Mission Kit.

Fielded throughout our active force, the Marine Corps declared IOC for the KC-130J transition in 2005; bringing increased capability, performance and survivability with lower operating and sustainment costs to the MAGTF. Forward deployed in support of ongoing operations since 2005, the KC-130J continues to deliver Marines, fuel and cargo whenever and wherever needed. In 2014 the KC-130J remains in high demand, providing tactical air-to-air refueling, assault support, close air support and Multi-sensor Imagery Reconnaissance (MIR) in support of OEF, Special Purpose MAGTF Crisis Response, and deployed MEUs.

Deployed in support of OEF since fielding in 2010, the bolt-on/bolt-off Harvest HAWK ISR/Weapon Mission Kit for the KC-130J continues to provide the extended MIR and CAS required by Marine forces in Afghanistan. Five mission kits have been delivered to date, with one more kit on contract to deliver in Fiscal Year 2014. Funding included in the Fiscal Year 2015 Budget request will be used to maintain operational relevance of this mission system through Hellfire P4 compatibility and the addition of a full motion video transmit and receive capability.

The Marine Corps has funded 52 of the 79 KC-130J program of record. The three aircraft included in the Fiscal Year 2013 budget will complete the Active Component (AC) requirement of 51 aircraft. The Marine Corps will use the AC backup aircraft to accelerate the Reserve Component (RC) transition from the KC-130T aircraft to the more capable, more efficient, KC-130J beginning in Fiscal Year 2014. The aircraft requested in the Fiscal Year 2015 President's Budget will continue to increase KC-130J inventory as we strive to achieve Full Operational Capability (FOC) in the RC. Delays in procurement would force the Marine Corps to sustain the KC-130T aircraft longer than planned at an increased cost.

P-8A Poseidon

The Fiscal Year 2015 President's Budget requests \$308.0 million in RDT&E,N for integrated development and associated testing and \$2.05 billion for procurement of eight FRP P-8A Poseidon aircraft which are scheduled to begin delivery in May 2017. APN funding includes Advanced Procurement for the subsequent FRP procurement lot. The P-8A Poseidon recapitalizes the Maritime Patrol Anti-Submarine Warfare (ASW), Anti-Surface Warfare (ASUW) and armed ISR capability currently resident in the P-3C Orion. The P-8A combines the proven reliability of the commercial 737 airframe with avionics that enables integration of modern sensors and robust communications. P-8A achieved IOC when the first Fleet squadron (VP-16) deployed to the Western Pacific with six aircraft in November 2013. As of February 2014, three Fleet squadrons have completed transition to P-8A. All Fleet squadrons are scheduled to complete transition by the end of Fiscal Year 2019. The P-8A program is meeting all cost, schedule and performance parameters in accordance with the approved Acquisition Program Baseline.

Boeing has delivered 13 aircraft (LRIP I/II) to the Fleet as of February 2014. LRIP III (11 aircraft), LRIP IV (13 aircraft), and FRP 1 (16 aircraft) are under contract, with the contract for FRP 1 (16 aircraft) signed on February 25, 2014. The Fiscal Year 2015 budget proposes to procure eight P-8As. This will sustain the P-3C to P-8A transition in the Fleet but is a reduction of eight aircraft from the Fiscal Year 2014 request. In the Fiscal Year 2015 request, we were compelled by fiscal constraints to lower the final P-8A inventory objective from 117 to 109 aircraft, reducing procurement over the FYDP by eight aircraft. The warfighting requirement remains 117 aircraft; however the revised inventory objective for 109 aircraft will provide adequate capacity at acceptable levels of risk.

As fleet deliveries of the Increment 1 configuration accelerate, integration and testing of P-8A Increment 2 capability upgrades continues. In particular, Phase 1 of P-8A Increment 2 Multi-Static Active Coherent ASW capability began initial flight testing in January 2014 and is on-track for IOT&E and fleet introduction in late 2014. The 2015 request also continues the prototyping and development of the more extensive P-8A Increment 3 upgrades, which expand the P-8A evolutionary acquisition strategy to deliver the next level of required P-8A capability.

P-3C Orion

In Fiscal Year 2015, \$2.8 million in APN is requested for P-3C airframe and mission systems sustainment. Funding is for continued wing modifications and mission systems sustainment for P-3C aircraft that will remain in service until the end of the decade. The legacy P-3C fleet continues to provide ASW, ASUW, and ISR support for Joint and Naval operations worldwide. The P-3C is being sustained to maintain warfighting capability and capacity until completion of P-8A transition in Fiscal Year 2019.

The P-3C aircraft is well beyond the original planned fatigue life of 7,500 hours for critical components, with an average airframe usage of over 18,000 hours. Since February 2005, the Navy's Fatigue Life Management Program has identified over 140 P-3 aircraft with fatigue damage beyond acceptable risk, resulting in either temporary or permanent grounding of each. P-3 groundings due to known material fatigue will continue for the remainder of the P-3 program, and unknown fatigue issues will continue to present persistent risk until P-8A transition is complete. To date, \$1.3 billion has been invested in P-3 wing sustainment, which has improved the overall structural health of the P-3 fleet. As of February 2014, there are currently 84 P-3C mission aircraft available.

EP-3 Aries Replacement/Sustainment

In Fiscal Year 2015, the President's Budget request is \$32.9 million in APN for EP-3 Aries Replacement/Sustainment. The APN request supports the installation and sustainment of multi-intelligence capabilities and modifications necessary to meet emergent classified requirements. These efforts are necessary to keep the platform viable until the EP-3 capabilities are recapitalized.

The EP-3E Aries is the Navy's premier manned Maritime Intelligence, Surveillance, Reconnaissance, and Targeting (MISR&T) platform. The Joint Airborne Signals intelligence (SIGINT) Common Configuration includes SIGINT spiral upgrades. These upgrades, in conjunction with Secretary of Defense and the ISR Task Force (ISR TF) surge efforts, are fielding a robust Multi-Intelligence (INT) capability inside the FYDP. Multi-INT sensors, robust communication, and data links employed by the P-3 air vehicle help ensure effective MISR&T support to conventional and non-conventional warfare across the current Range of Military Operations. Operating around the globe, the EP-3E continues to satisfy critical Joint, Combatant Commander, and Service airborne ISR priorities and requirements.

The Navy is in the process of developing the MISR&T Family of Systems construct to recapitalize the EP-3 MISR&T capabilities within existing Programs of Record. The strategy has been further refined to focus on modular systems and payloads required for the Navy to conduct MISR&T on a variety of vehicles, providing Combatant Commanders with scalable capability and capacity. The inclusive full-spectrum approach will deliver increased ISR persistence by the end of Fiscal Year 2018 and exceed the aggregate capability and capacity of our legacy platforms by the end of Fiscal Year 2020. However, as we transition from legacy platforms like the EP-3E *Aries II*, fiscal constraints will compel us to take moderate risk in some collection capabilities over the next few years.

UNMANNED AIRCRAFT SYSTEMS (UAS)

MQ-4C Triton UAS

The Fiscal Year 2015 President's Budget postpones the MQ-4C Triton (formerly known as BAMS or Broad Area Maritime Surveillance) LRIP from Fiscal Year 2015 to Fiscal Year 2016. The Fiscal Year 2015 President's Budget requests \$498 million in RDT&E,N to continue Triton SDD and \$37.4 million APN for procurement of long-lead materials for the first lot of LRIP aircraft. Due to software integration delays during initial testing, the program experienced a year-long delay to the start of flight testing. A program replan has been completed and the program remains executable within current funding levels. Triton will start establishing five globally-distributed, persistent maritime ISR orbits beginning in Fiscal Year 2017. MQ-4C Triton test vehicles have completed 12 test

flights as of February 25, 2014 and are on schedule to begin developmental testing with sensors later this year. This rigorous integrated flight test program will support Milestone C planned for Fiscal Year 2016. The MQ-4C Triton is a key component of the Navy Maritime Patrol Reconnaissance Force. Its persistent sensor dwell, combined with networked sensors, will enable it to effectively meet ISR requirements in support of the Navy Maritime Strategy.

The Navy currently maintains an inventory of four U.S. Air Force (USAF) Global Hawk Block 10 UAS acquired for demonstration purposes and to perform risk reduction activities for the Triton UAS Program. These aircraft, the Broad Area Maritime Surveillance Demonstrators, or BAMS-D, have been deployed to CENTCOM's AOR for over five years. BAMS-D recently achieved over 10,000 flight hours in support of CENTCOM ISR tasking. These demonstration assets are adequate to cover all Navy needs through Fiscal Year 2016.

Unmanned Combat Air System Demonstration (UCAS-D)

The Fiscal Year 2015 President's Budget requests \$36.0 million in RDT&E, to be combined with an Fiscal Year 2014 \$39 million reprogramming, to continue Navy UCAS-D flight testing of this unmanned carrier-suitable air vehicle commonly referred to as X-47B. These resources will advance technological development and risk mitigation for the UCLASS system and continue the autonomous aerial refueling (AAR) demonstration. The X-47B has completed Carrier Qualification detachments consisting of catapult testing, arrested landings and envelope expansion, to include testing in off-nominal conditions and increased sea states. The latest AAR testing period was completed in January 2014 utilizing a manned surrogate aircraft. Carrier demonstration and AAR development and testing activities are planned to continue throughout 2015. The Department is working to reduce risk and align program/CVN operational schedules to best accommodate risk mitigation and meet demonstration objectives.

Unmanned Carrier Launched Airborne Surveillance and Strike (UCLASS) System

The Fiscal Year 2015 President's Budget requests \$403.0 million in RDT&E,N for UCLASS system development efforts. The major portion of this funding will enable contract award to industry for air system development to meet Joint Requirements Oversight Council (JROC) direction to expedite fielding of an Early Operational Capability (EOC). The UCLASS system will enhance carrier air wing capability and versatility for the Joint Forces commander through integration of a persistent and mission flexible unmanned aircraft into the Carrier Air Wing by Fiscal Year 2021. The JROC issued a new memorandum in February 2014, reaffirming the need for rapid fielding of an affordable, adaptable carrier-based ISR platform with precision strike capability. The UCLASS system will provide persistent ISR with precision strike capabilities supporting missions ranging from permissive counter-terrorism operations, to missions in contested

environments, to providing enabling capabilities for high-end area denied operations. It will be sustainable onboard an aircraft carrier and designed to be fully integrated with the current carrier air wing. The UCLASS system will have the ability to pass command and control information along with sensor data to other aircraft, naval vessels, and ground forces. Sensor data will be transmitted to exploitation nodes afloat and ashore. Interfaces will be provided with existing ship and land-based command and control systems, as well as processing, exploitation, and dissemination systems. The UCLASS system will achieve these capabilities through development of a carrier-suitable, semi-autonomous, unmanned Air Segment; a Control System and Connectivity Segment; and a Carrier Segment. These segments will be overseen by the Government as the Lead System Integrator, providing government-led system-of-systems integration for the UCLASS Program.

MQ-8 Vertical Takeoff and Landing Unmanned Aerial Vehicle (VTUAV) and Associated Rapid Deployment Capability (RDC) Efforts

The MQ-8 Fire Scout is an autonomous vertical takeoff and landing tactical UAV (VTUAV) designed to operate from any suitably-equipped air-capable ships, carry modular mission payloads, and operate using the Tactical Control System and Line-Of-Sight Tactical Common Data Link. The Fiscal Year 2015 President's Budget requests \$47.3 million of RDT&E,N to continue development of an endurance upgrade (MQ-8C), integrate radar and weapons on the MQ-8C, and continue payload and LCS integration with the MQ-8B and MQ-8C. The request for \$40.7 million in APN defers procurement of MQ-8C air vehicles to better align with LCS deliveries, while procuring MQ-8 System ground control stations, ancillary, training and support equipment, technical support and logistics to outfit the ships and train the Aviation Detachments. Commonality of avionics, software, and payloads between the MQ-8B and MQ-8C has been maximized. The MQ-8B and MQ-8C air vehicles will utilize the same ship-based ground control station and other ship ancillary equipment.

Fire Scout was deployed to Afghanistan from May 2011 until August 2013, and amassed more than 5,100 dedicated ISR flight hours in support of U.S. and coalition forces. Successful deployments aboard USS KLAIRING, USS SIMPSON, USS BRADLEY, USS SAMUEL B. ROBERTS, USS HAYLYBURTON, and USS ELROD have supported Special Operations Forces (SOF) and Navy operations since 2012. The MQ-8 Fire Scout has flown more than 4,800 hours from frigates, performing hundreds of autonomous ship board take-offs and landings. The Fire Scout program will continue to support integration and testing for LCS-based mission modules.

Tactical Control System (TCS)

The Fiscal Year 2015 President's Budget requested \$8.5 million in RDT&E,N for the MQ-8 System's Tactical Control System (TCS). TCS provides a standards compliant,

open architecture, with scalable command and control capabilities for the MQ-8 Fire Scout air system. In Fiscal Year 2015, TCS will continue to transition to the Linux operating system software to a technology refreshed ground control station, enhance the MQ-8 System's Ocean Surveillance Initiative for ships Automatic Identification System and sensor track generation. The Linux operating system conversion overcomes hardware obsolescence issues with the Solaris based control stations and provides lower cost software updates using DoD common application software. In addition, the TCS Linux upgrade will enhance collaboration with the Navy's future UAS Common Control System (CCS).

Small Tactical Unmanned Aircraft System (STUAS) RQ-21A Blackjack

The Fiscal Year 2015 President's Budget requests \$12.9 million in RDT&E (\$4.8 million USN, \$8.1 million USMC) and \$70.5 million in Procurement, Marine Corps (PMC) for three RQ-21A systems which include 15 air vehicles that will address Marine Corps ISR capability requirements currently supported by service contracts. This Group 3 UAS will provide persistent ship and land-based ISR support for expeditionary tactical-level maneuver decisions and unit level force defense and force protection missions. Blackjack entered LRIP in 2013 and is currently executing IOT&E.

The RQ-21's current configuration includes full motion video and signals intelligence capability. The Marine Corps is actively pursuing technological developments for the RQ-21 system in an effort to provide the MAGTF and Marine Corps Forces Special Operations Command (MARSOC) with significantly improved capabilities. Initiatives include over-the-horizon communication and data relay ability to integrate the system into future networked digital environments; electronic warfare and cyber payloads to increase non-kinetic capabilities; and change detection radar and moving target indicators to assist warfighters in battlespace awareness and force application.

RQ-7B Shadow Marine Corps Tactical UAS (MCTUAS)

The Fiscal Year 2015 President's Budget requests \$0.9 million in RDT&E,N for the RQ-7B Shadow to continue development efforts and government engineering support and \$2.5 million in APN to acquire new air vehicle data processors and update engines to improve air vehicle reliability. The more capable RQ-21 Blackjack is scheduled to perform the preponderance of Marine Corps ISR responsibilities as divestment from the RQ-7B Shadow continues.

STRIKE WEAPONS PROGRAMS

Tactical Tomahawk (TACTOM) BLK IV Cruise Missile Program

The Fiscal Year 2015 President's Budget requests \$194.3 million in Weapons Procurement, Navy (WPN) for procurement of an additional 100 BLK IV TACTOM weapons and associated support, \$ 61.5 million in OPN for the Tomahawk support equipment, and \$27.4 million in RDT&E for capability updates of the weapon system. WPN resources will be for the continued procurement of this versatile, combat-proven, deep-strike weapon system in order to meet ship load-outs and combat requirements. OPN resources will address the resolution of TTWCS obsolescence and interoperability mandates. RDT&E will be used to initiate engineering efforts for A2/AD navigation and communication upgrades.

Tomahawk Theater Mission Planning Center (TMPC)

TMPC is the mission planning and command and control segment of the Tomahawk Weapon System. Under the umbrella of TMPC, the Tomahawk Command and Control System (TC2S) develops and distributes strike missions for the Tomahawk Missile; provides for precision strike planning, execution, coordination, control and reporting; and enables Maritime Component Commanders the capability to plan and/or modify conventional Tomahawk Land-Attack Missile missions before and in flight. TC2S optimizes all aspects of the Tomahawk missile technology to successfully engage a target. TC2S is a Mission Assurance Category 1 system vital to operational readiness and mission effectiveness of deployed and contingency forces for content and timeliness. The Fiscal Year 2015 President's Budget requests \$13.4 million in RDT&E and \$40.3 million OPN for continued TMPC system upgrades and sustainment. These planned upgrades support integration, modernization and interoperability efforts necessary to keep pace with missile, imagery and threat changes, retain/enable capabilities of the Tomahawk missile and includes providing an improved GPS denied navigation system, rewrite/update of Tomahawk Planning System's unsupported legacy software code, and technology refreshes to reduce vulnerability to cyber-attacks. These resources are critical for the support of over 180 TC2S operational sites to include: Cruise Missile Support Activities, Tomahawk Strike and Mission Planning Cells (5th, 6th, 7th Fleet), CSGs, Command and Control Nodes, Surface and Subsurface Firing Units and Labs/Training Classrooms.

Offensive Anti-Surface Warfare (OASuW) Weapon

The Fiscal Year 2015 President's Budget requests \$203 million in RDT&E for the continued development and technology transition of the Defense Advanced Research Program Agency (DARPA) Long Range Anti-Ship Missile (LRASM) in support of the air launched OASuW/Increment 1 program. LRASM will provide the Combatant

Commanders the ability to conduct Anti-Surface Warfare (ASuW) operations against high value surface combatants protected by Integrated Air Defense System with long-range Surface-to-Air-Missiles and will deny the adversary the sanctuary of maneuver. OASuW/Increment 1 program is a Department of the Navy led joint program with a schedule to field LRASM on the B-1B by the end of Fiscal Year 2018 and the F/A-18E/F by the end of Fiscal Year 2019. Funding supports Analysis of Alternative (AoA) updates to assess fully capable OASuW/Increment 2 material solution(s) geared to the advanced 2024 threat. Surface and air-launched material solutions will be assessed and study results will inform investment options in Fiscal Year 2016 and beyond.

Sidewinder Air-Intercept Missile (AIM-9X)

The Fiscal Year 2015 President's Budget requests \$47.3 million in RDT&E,N and \$73.9 million in WPN for this joint DoN and USAF program. RDT&E,N will be applied toward AIM-9X Block II developmental/operational tests and requirements definition for Joint Staff directed Insensitive Munitions requirements, redesign critical components facing obsolescence, and continue AIM-9X/Block III development activities. WPN will be for production of a combined 167 All-Up-Rounds and Captive Air Training Missiles and missile-related hardware. The AIM-9X Block II Sidewinder missile is the newest in the Sidewinder family and is the only short-range infrared air-to-air missile integrated on USN/USMC/USAF strike-fighter aircraft. This fifth-generation weapon incorporates high off-boresight acquisition capability and increased seeker sensitivity through an imaging infrared focal plane array seeker with advanced guidance processing for improved target acquisition; a data link; and advanced thrust vectoring capability to achieve superior maneuverability and increase the probability of intercept of adversary aircraft.

Advanced Medium-Range Air-to-Air Missile (AMRAAM/AIM-120)

The Fiscal Year 2015 President's Budget requests \$10.2 million in RDT&E for continued software capability enhancements and \$32.2 million in WPN for missile-related hardware. AMRAAM is a joint USAF and DoN missile that counters existing aircraft and cruise-missile threats. It uses advanced electronic attack capabilities at both high and low altitudes, and can engage from beyond visual range as well as within visual range. AMRAAM provides an air-to-air first look, first shot, first kill capability, while working within a networked environment in support of the Navy's Theater Air and Missile Defense Mission Area. Prior missile production delays caused by rocket-motor anomalies were corrected when the Nordic Ammunition Group (NAMMO) was brought on-line as an alternate source to Alliant Technologies (ATK). We now anticipate AIM-120D production will recover for both the USAF and the DoN in 2014.

Small Diameter Bomb II (SDB II)

The Fiscal Year 2015 President's Budget requests \$71.8 million in RDT&E for the continued development of this joint Department of the Navy and Department of the Air Force (lead) weapon and bomb-rack program. SDB II provides an adverse weather, day or night standoff capability against mobile, moving, and fixed targets, and enables target prosecution while minimizing collateral damage. SDB II will be integrated into the internal carriage of both Department of the Navy variants of the Joint Strike Fighter (F-35B and F-35C) as well as onto the Navy Super Hornet (F/A-18E/F). The Joint Miniature Munitions Bomb Rack Unit (JMM BRU) BRU-61A/A is being developed to meet the operational and environmental integration requirements for internal bay carriage of the SDB II in the F-35B and F-35C. JMM BRU entered Technology Development in June 2013.

Joint Standoff Weapon (JSOW)

The Fiscal Year 2015 President's Budget requests \$4.4 million in RDT&E,N to complete JSOW C-1 operational testing activity and \$130.8 million in WPN for production of 200 All-Up Rounds. The JSOW C-1 variant fills a critical gap by adding maritime moving-target capability to the highly successful baseline JSOW C program. JSOW C-1 targeting is achieved via a two-way data-link and guidance software improvements. JSOW C-1 is planned to achieve Initial Operational Capability in Fiscal Year 2015 after the completion of F/A-18E/F H10E Software Configuration Set operational testing.

Advanced Anti-Radiation Guided Missile (AARGM)

The Fiscal Year 2015 President's Budget requests \$16.1 million of RDT&E,N for Block 1 follow-on development and test program and \$111.7 million of WPN for production of 108 All-Up-Rounds and Captive Training Missiles. The AARGM cooperative program with Italy transforms the High-Speed Anti-Radiation Missile (HARM) into an affordable, lethal, and flexible time-sensitive strike weapon system for conducting Destruction of Enemy Air Defense (DEAD) missions. AARGM adds multi-spectral targeting capability and targeting geospecificity to its supersonic fly-out to destroy sophisticated enemy air defenses and expand upon the HARM target set. Initial Operational Capability on the F/A-18C/D aircraft was reached in July 2012 and forward deployed to U.S. Pacific Command (PACOM). With release of H-8 SCS, AARGM is integrated on F/A-18E/F and EA-18G aircraft.

Advanced Precision Kill Weapon System II (APKWS II)

The Fiscal Year 2015 President's Budget requests \$45.9 million in PANMC, for procurement of 1,555 APKWS II Precision Guidance Kits. APKWS II provides an unprecedented precision guidance capability to DoN unguided rocket inventories

improving accuracy and minimizing collateral damage. Program production is on schedule to meet the needs of our warfighters in today's theaters of operations. Initial Operational Capability was reached in March 2012 on the Marine Corps' AH-1Z. The Navy is finalizing an APKWS II integration effort on the MH-60S for an Early Operational Capability by April 2014.

Joint Air-to-Ground Missile (JAGM)

The Fiscal Year 2015 President's Budget requests \$6.3 million in RDT&E to begin a 5-year integration effort for JAGM Increment 1 onto the Marine Corps AH-1Z to achieve an Initial Operational Capability by Fiscal Year 2021. JAGM is a Joint Department of the Army and Department of the Navy pre-Major Defense Acquisition Program with the Army designated as the lead service. JAGM is a direct attack/close-air-support missile program that will utilize advanced seeker technology and be employed against land and maritime stationary and moving targets in adverse weather and will replace the Hellfire and TOW II missile systems. In November 2012, the Joint Chiefs of Staff authorized the JAGM incremental requirements and revalidated the Department of the Navy's AH-1Z Cobra aircraft as a threshold platform. JAGM Increment 1 is expected to achieve Milestone B certification in Fiscal Year 2015.